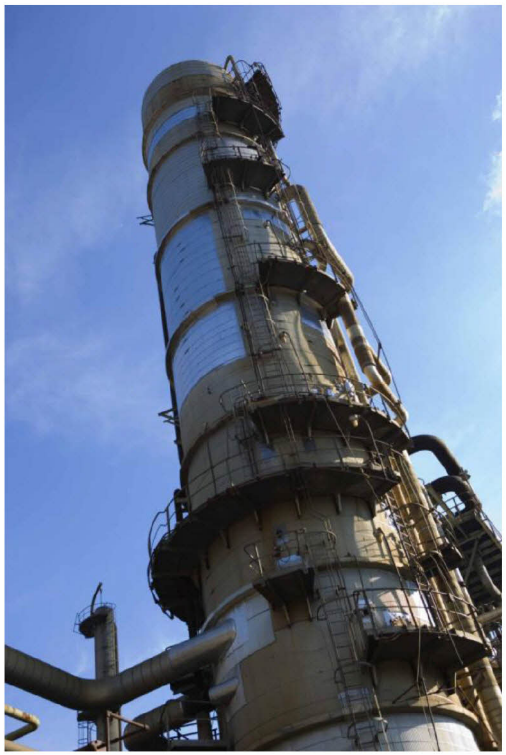
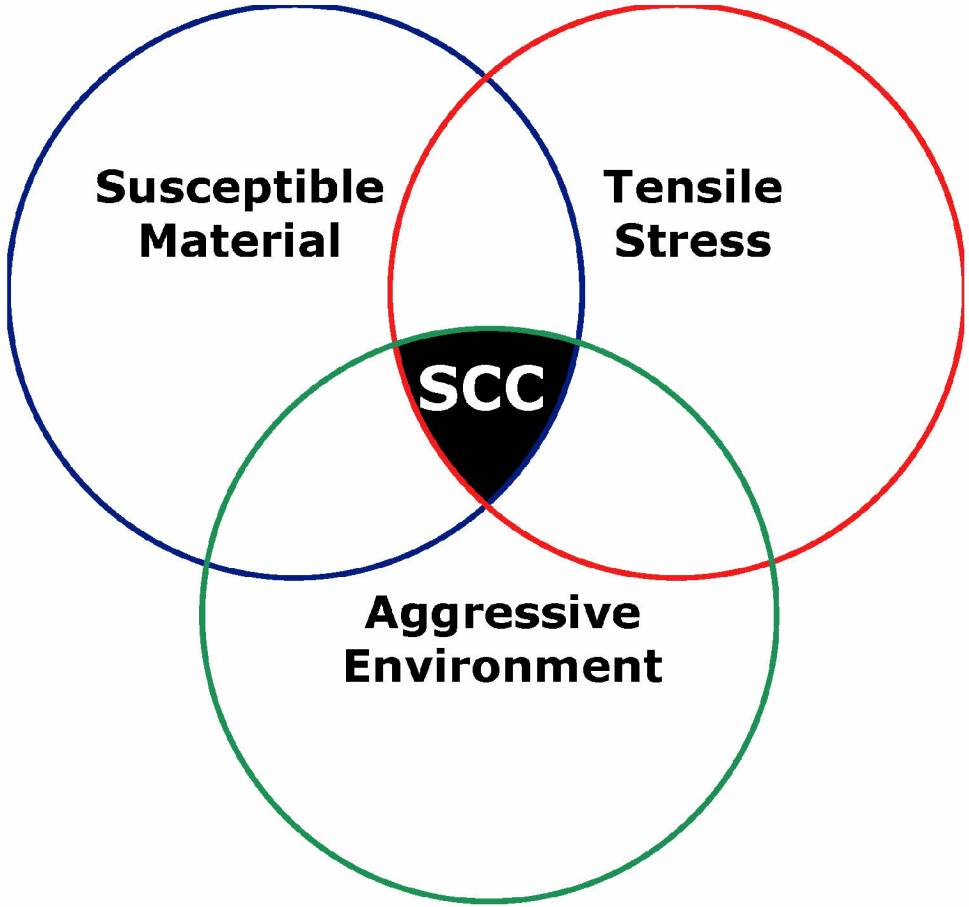
SCC Class Exercise



Senior Analyst and Inspector Training
Crude Units

Stress Corrosion Cracking (SCC)

- These principles apply to all SCC mechanisms including:
  - Polythionic acid SCC
  - Chloride SCC
  - Caustic SCC
  - Amine SCC
  - Carbonate SCC (FCC overhead)



Stress Corrosion Cracking – Class Exercise

	Chloride	Polythionic	Caustic	Ammonia
Susceptible Metals				
Locations in a Crude Unit Where it Might Occur				
Environment Needed (Temperatures and Chemicals)				
Stress Sources (List All Possibilities)				

Heat Treating Temperatures for Exchanger U-Bends for Stress Relief

Material	PWHT Temperature °F (°C)	
	Furnace	Electric Resistance
Carbon Steel	1150 (620)	1250 (675)
Monel	1150 (620)	1250 (675)
Admiralty	700 (370)	950 (510)
Aluminum Bronze	750 (400)	950 (510)
70-30 Cu-Ni	950 (510)	1200 (650)
300 Series Stainless		1900 (1040)
Chrome-Moly (1.25-9 Cr)	**	**

All temperatures plus or minus 50°F (30°C)

**No more than 100°F (furnace) or 200°F (resistance) above SA-213 min. tempering temperature for that grade of material

Electric Resistance Heating is Preferred for 300 Series Stainless Steels to Minimize Possibility of Sensitization